Mineralo North Apr. '91

→ SNIP

887748

Review of Snip Project: Geology, Ore Reserves, Grade Control and Mine Development

Al Samis
Chief Geologist, Cominco Limited, Snip Project

Introduction

The Snip gold deposit is located in the Iskut River Valley, 100 km N.W. of Stewart, B.C. The mine is jointly owned by Cominco Metals (60%) and Prime Resource (40%), with Cominco as operator. Access is by air to the 1,500 metre Bronson Creek airstrip or by hovercraft on the Stikine and Iskut Rivers. (Figure 1)

The original showing was located in 1965, by Cominco geologists working on the western slope of Johnny Mountain. The property changed hands in the 1970's however Cominco reacquired the claims in 1980. Serious exploration work began in 1986 when the property was optioned to Delaware Resources Corporation (subsequently bought out by Prime). Exploration drilling and underground sampling in the period 1986 to 1988 indicated the presence of a significant gold deposit. Detailed underground drilling and bulk sampling in 1989 confirmed the presence of a minable deposit. Construction of mill and service complexes was completed in 1990 and production began with the commissioning of the mill on January 25, 1991. The present reserves represent a 10 year mine life at a production rate of 300 tonnes per day.

Geology

The Snip property is underlain by a sequence of Triassic aged feldspathic greywacke, siltstone and matic tuffs. (Figure 2) The sediments generally strike east west and have variable dips to the north. This sequence has been intruded by feldspar porphyries, most notable the Red Bluff porphyry which extends along Bronson Creek. The main zone of mineralization, known as the Twin zone, lies within the greywackes 100 metres to the south of the Red Bluff porphyry.

The Twin zone is a 0.5 to 15 metre wide, sheared, quartz-carbonate-sulphide vein. It has been traced by drilling over 1,000 metres and has a vertical range of 500 metres. This shear hosted vein strikes at 120° and dips south west at 30° to 90°. For most of it's length the vein is divided into two parts by a post mineralization, fine grained basic dike. (Figure 3)

The vein contains three distinctive ore types:

1) Streaky quartz ore consisting of quartz, calcite, green biotite, and sulphide laminae within strongly sheared greywacke.

2) Crackle quartz consisting of shattered quartz vein infilled with green mica and disseminated sulphides.

3) Massive sulphide veins of mainly pyrite and pyrrhotite with minor sphalerite, chalcopyrite, and rare molybdenite, galena, and arsenopyrite.

The styles of mineralization are aligned to form a lateral zonation. The streaky and crackle quartz ore make up the bulk of the reserve in the western and central portion of the deposit. The massive sulphide ore is characteristic of the discontinuous and narrow eastern fringe.

Ore Reserves

Diluted ore reserves as of the end of 1990 were 940,000 metric tonnes containing 28.5 grams/tonne gold. Dilution has been added at 20% by weight at zero grade. The reserve is based on 12.5 metre spaced drilling and development in ore on four mining levels. Individual assays were cut to 150 grams gold and 1.5 metre minimum mining width was used.

The ore reserves have changed significantly from the initial 1988 estimate. The 1988 reserve which was calculated on 50 metre spaced exploration drilling, was 1,370,000 tonnes at 22.8 grams/tonne. The completion of detailed drilling, geological mapping in the footwall ramp, and development in ore, led to a 1990 reserve calculation of 940,000 tonnes at 28.5 grams/tonne. The 30% decrease in tonnage resulted from knowledge gained on the impact of the major fault zone on the west end of the deposit and the discontinuous character of the sulphide style of mineralization on the eastern fringe. Neither of these features were apparent in the wide spaced exploration drilling and limited underground development available at the end of 1988.

A total of 63,700 metres of drilling in 750 holes was drilled in the period 1986 to 1990. Although expensive in this remote location, this drilling and the development involved to accomplish it, clearly defined the ore body and simplified mine planning. The undercutting of five stopes, and service raises driven in ore from 220 to 340 levels have encountered no significant geological surprises. Forecast grades from drilling are being realized from stopes mined.

Mine and Mill

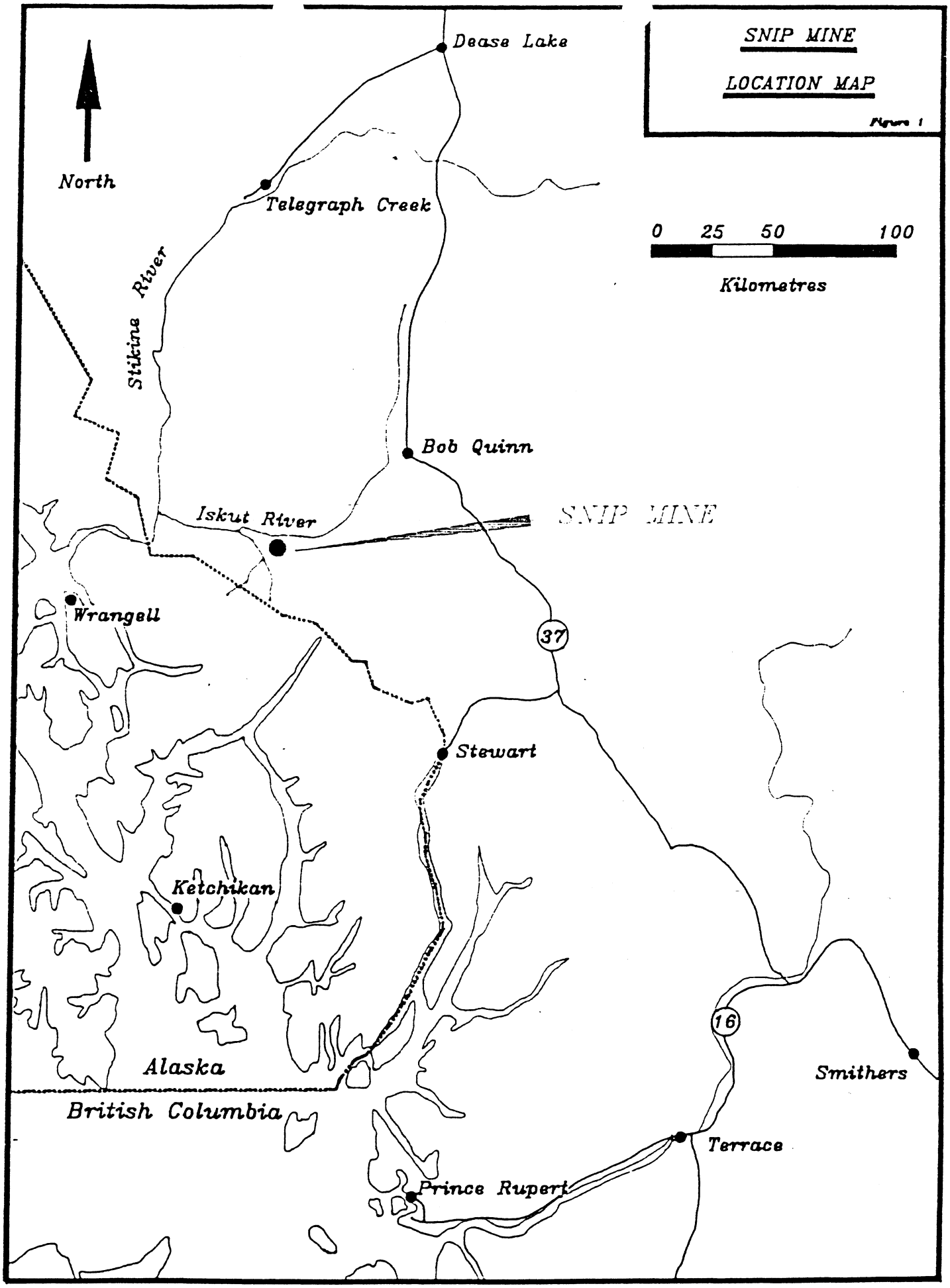
The planned production rate from the deposit is 300 tonnes/day. Present mill feed is coming from a combination of mine production and surface stockpiles. A total of 18,000 tonnes had been stock piled during the exploration and pre-production period. The five stopes presently in production are two shrinkage stopes, two conventional cut and fill stopes and a mechanized cut and fill stope. Two more stopes are planned for development over the next two months.

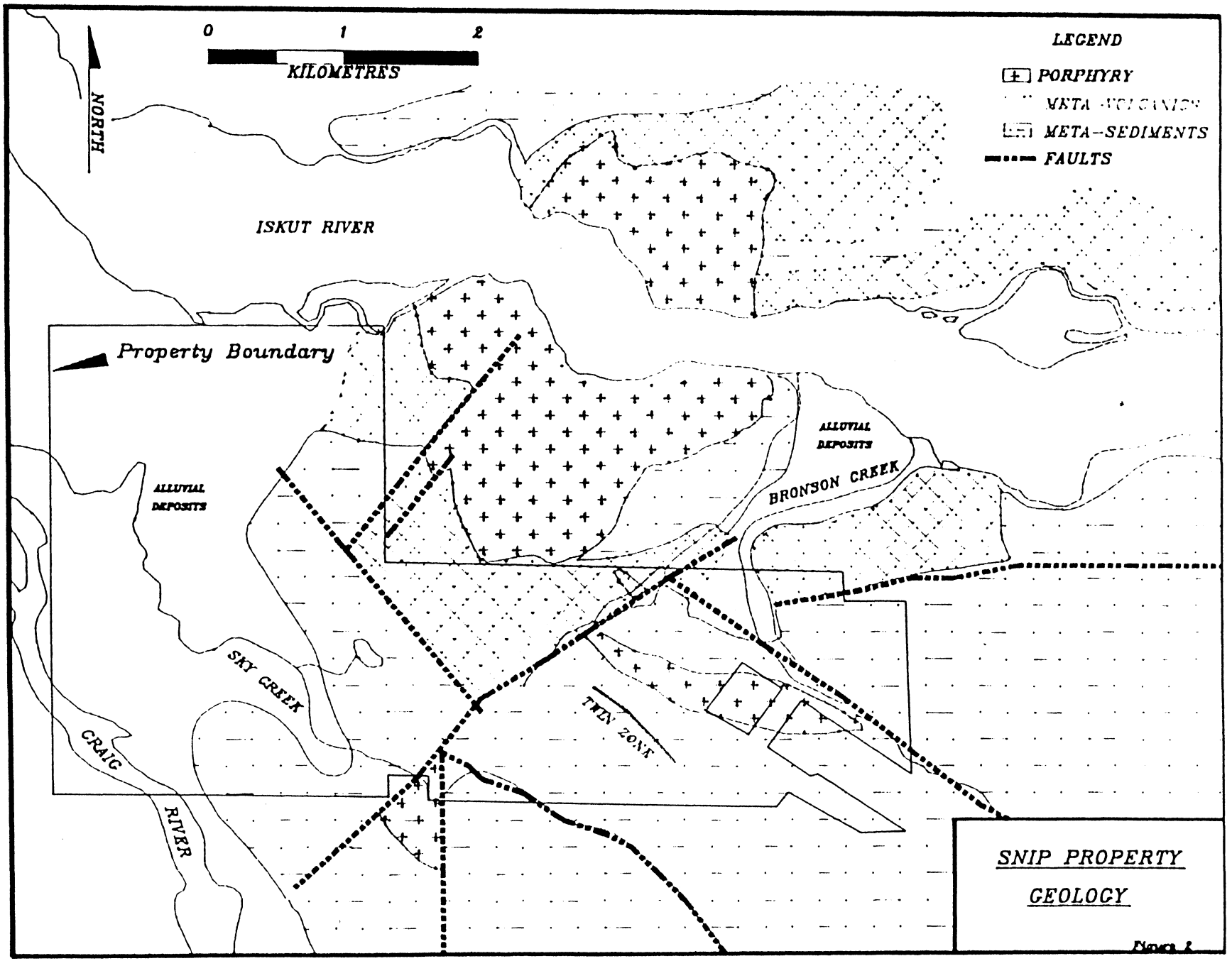
The mill achieved it's full production rate six days, after start-up and from February 1st to March 15th processed an average of 320 tonnes per day. Grade for this period was near reserve grade at 28.6 grams/tonne. Overall mill recovery has been 91%.

The gold is recovered by two methods. Twenty five percent reports to a gravity circuit and is made into bullion on site. A portion of the remaining seventy five percent is recovered as a sulphide rich floatation concentrate.

The concentrate is collected into large fibre bags and shipped by Hovercraft or Bristol aircraft to Wrangell. It is then sent by sea to Japan for final processing.

The operation employs 116 people on a four week in, two weeks out rotational cycle. While on site workers live in single room bunkhouse accommodation. The workforce is drawn from B.C., Yukon, Alberta and Saskatchewan.


SNIP MINE
LOCATION MAP
Figure 1
North
Dease Lake
Telegraph Creek
Stikine River
0 25 50 100
Kilometres
Bob Quinn
Iskut River
SNIP MINE
Wrangell
37
Stewart
Ketchikan
16
Alaska
British Columbia
Smithers
Terrace
Prince Rupert


0
1
2
KILOMETRES
NORTH
LEGEND
PORPHYRY
META-VOLCANICS
META-SEDIMENTS
FAULTS
ISKUT RIVER
Property Boundary
ALLUVIAL DEPOSITS
ALLUVIAL DEPOSITS
BRONSON CREEK
SKY CREEK
TWIN ZONE
CRAIG
RIVER
SNIP PROPERTY
GEOLOGY

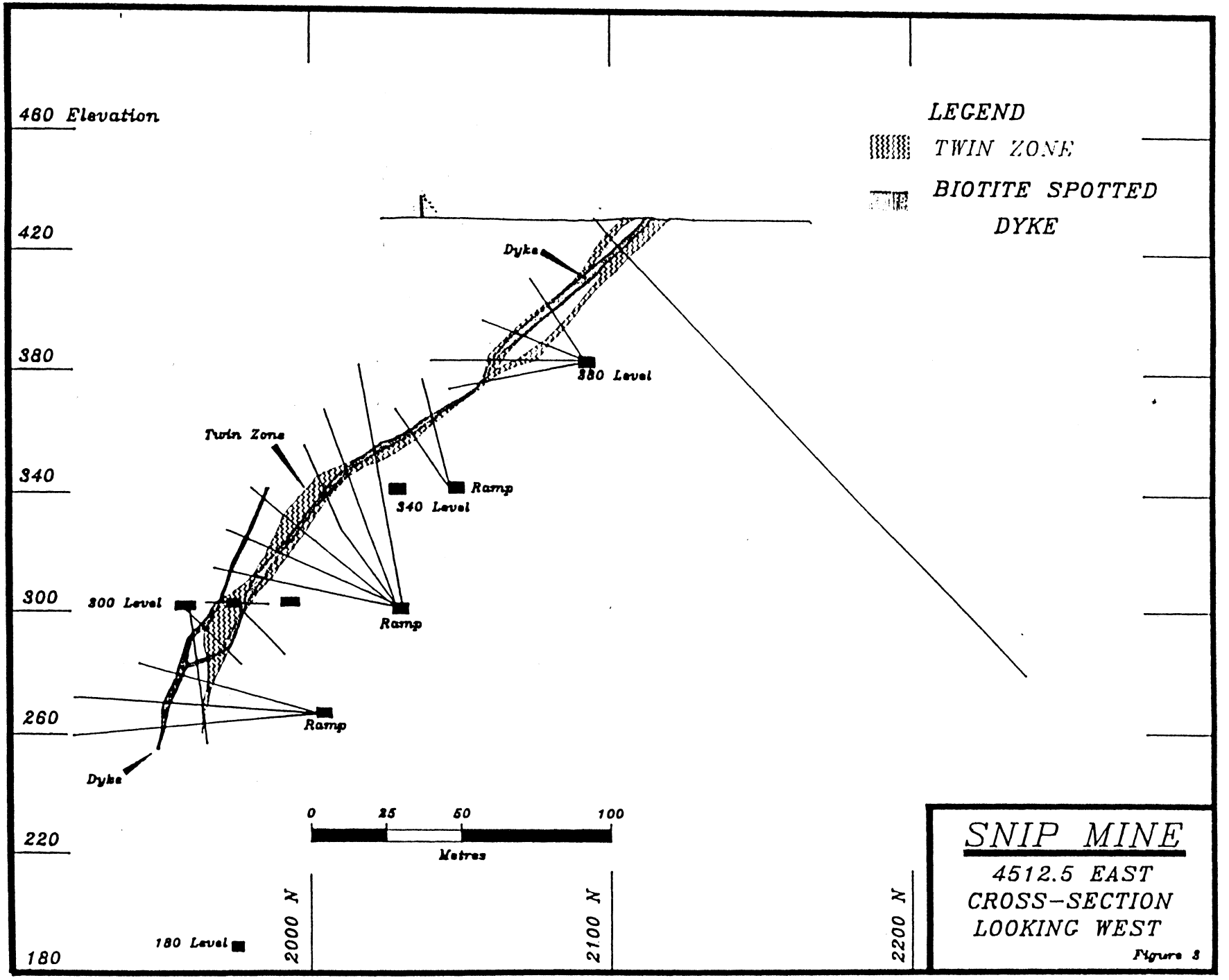

460 Elevation
420
380
340
300
260
220
180
LEGEND
TWIN ZONE
BIOTITE SPOTTED DYKE
Dyke
380 Level
Twin Zone
Ramp
340 Level
300 Level
Ramp
Ramp
Dyke
180 Level
0
25
50
100
Metres
2000 N
2100 N
2200 N
SNIP MINE
4512.5 EAST
CROSS-SECTION
LOOKING WEST
Figure 3

Figure 4

SNIP PROJECT

TWIN ZONE

1990 LONG SECTION